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NOTES ON THE HYDROBIINI (COLEOPTERA-HYDROPHILIDÆ) of BOREAL AMERICA

BY FRED C. WINTERS
Santa Barbara, California

The genera and species which were formerly included in the tribe Hydrobiini Lec. have been separated by Orchymont (Ann. Soc. Ent., France, 88, 1919, p. 136)¹ into two subtribes: Hydrobiæ and Helocharæ, an arrangement which has been accepted by Alfred Knisch in his Catalogue of Hydrophilidæ, published by W. Junk, Berlin, 1924.

The following table and notes concerning our American species are arranged in accordance with this work, and are submitted with the hope that they will prove helpful to our students of these insects:

Maxillary palpi stout and short, little longer or shorter than the antennæ, last joint as long as or, as a rule, longer than the penultimate, last joint of tarsi shorter than the preceding ones united.....Subtribe *Hydrobiæ* Orch.
To it belong: *Crenitis*, *Crenitulus*, *Paracymus*, *Hydrobius*, *Hydrocylus*, *Anacæna*, and *Laccobius*. Type genus *Hydrobius*.

Maxillary palpi much slenderer than in the Hydrobiæ, much longer than the antennæ, last joint as a rule shorter than the penultimate (except in *Enochrus* s. str.), antennæ always nine-jointed.....Subtribe *Helocharæ* Orch.
To it belong: *Helochares* (Muls.), *Enochrus* (*Philhydrus*), *Cymbiodyta*, *Helocombus*, and *Helobata* (*Helopeltis* Horn). Type genus *Helochares*.

Key for the separation of the genera of the subtribe Hydrobiæ Orch.

- Elytra with sutural striæ, abdomen with five visible ventral segments 2
- Elytra without sutural striæ, abdomen with six visible ventral segments, trochanters of hind legs enlarged, hind tibiæ curved *Laccobius* Er.
2. Species larger, longer than 5 mm., elytra striate or rows of punctures very pronounced..... 3
- . Species smaller, not over 3 mm. in length, elytra confusedly

- punctate or almost impunctate, never striate, at the most punctures subserially arranged..... 4
3. Head broader than long, præclypeus not visible, lateral margin of thorax and elytra even.....*Hydrobius* Leach
- . Head longer than broad, præclypeus visible, lateral margin of thorax and elytra serrate emarginate.....*Hydrocylus* Sharp
4. Eyes protuberant, form oblong, subdepressed.....*Crenitis* Bedel
- . Eyes not protuberant..... 5
5. Elytra narrowed posteriorly almost from the humerus, mesosternum slightly protuberant, hind tarsi united longer than tibiæ.....*Crenitulus* gen. nov.
- . Form short and convex, tibiæ rather coarsely spinulose, hind tarsi at the most as long as tibiæ..... 6
6. Middle and hind femora densely pubescent, upper surface testaceous to piceous, never with a metallic luster.....*Anacæna* Thom.
- . Middle and hind femora at most sparsely pubescent at base, disc always with a metallic luster.....*Paracymus* Thom.

Genus LACCOBIUS Er.

Only two distinct species are known to inhabit boreal America, and are easily separated:

- Punctures of the disc of the elytra arranged in distinct rows, form shorter and more convex.....*agilis* Rand.
- Disc of elytra confusedly punctate, form more oblong.....*ellipticus* Lec.

Male. Second and third segments of front tarsi broader.

Habitat. Along the sandy margins of lakes and brooks.

L. agilis Rand: Orono, Me. (Coll. Dodge); Riverton and Portsmouth, R. I.; Claremont, N. H. (Coll. Dow); Kissena Lake and Oakland Lake, L. I.; Woodstock, Vt.; Stony Point and Ardsley on Hudson, N. Y.; Totowa, N. J.; Fort Wingate, N. M.; Jemez Springs, N. M. (Coll. Sherman); Riverside, Cal. Doctor Horn records it from the middle states westward to California and Oregon.

L. ellipticus Lec.: San Francisco (Coll. Dodge), Camp Meeker, Santa Barbara, Santa Cruz Island (Doctor Horn), and Riverside, Cal.; southern portions of California, Arizona, and Lower California.

Genus HYDROBIUS Leach

- Alternate intervals of elytra with row of coarse punctures..... 2
- Alternate intervals of elytra without series of coarse punctures, elytra without trace of scutellar striæ.....*scabrosus* Horn

2. Elytra with well-marked striæ, form oblong.....*fuscipes* Linn.
 —. Elytra with rows of fine punctures, form short and convex..... 3
3. Posterior femora merely closely punctate near base, not opaque
 and pubescent.....*tumidus* Lec.
 —. Posterior femora densely punctate and pubescent near base and
 along the upper border.....*melænus* Germ.

H. fuscipes Linn. This is the type of the genus, and is to be found in the boreal as well as the nearctic regions. I have seen specimens from Flatbush, L. I., Tompkins Cove, Staten Island, N. Y., Hackensack, N. J., Woodstock, Vt., Richmond, Va. (Coll. Dodge), Lake of the Clouds, N. H., Stoneham and Swampscott, Mass., Orono, Me. (Coll. Beaulne), Ottawa, Ont., Pullman, Wash., Santa Barbara and Riverside, Cal. It is common in standing waters from early spring to fall.

H. tumidus Lec. Of this apparently rare species I have seen only the specimens in Mr. Leng's collection from Staten Island, N. Y., and the one in my own collection from Mineola, Long Island, N. Y., caught in a stagnant pool underneath a half-submerged log. Doctor Horn records it from New York to Florida; Blatchley from Marion County, Ind.; Leng and Mutchler from Crescent City, Haw Creek, Bartow and Jacksonville, Fla.

H. melænus Germ. This species is better known as *globosus* Say, but Germar's name has priority as proven by Orchymont in the Ann. Soc. Ent., France, 88, 1919, p. 137. It is abundant in the eastern states and seems to prefer running water. It may be found throughout the summer. I have seen specimens from Brooklyn, N. Y. (Coll. Shoemaker), Yonkers, N. Y., Catskill Mountains, N. Y. (Coll. Angell), Staten Island, N. Y. (Coll. Davis), Ardsley on Hudson, Tompkins Cove, N. Y., Massachusetts (Coll. Dodge), Haldon, Tatowa, N. J., Ash Grove, Pa. (Coll. Davis), and Richmond, Va. Mr. Blatchley records it from Mitchell, Lawrence County, Ind. According to Mr. Richmond (Bul. Am. Mus. Nat. Hist., 42, 1920, p. 52), its egg cases are more frequently found in moss or in mud at the shore line and usually entirely concealed except for the cap end, while those of *fuscipes* are attached to floating vegetation away from the bank. The larvæ of both of these species are carnivorous and very much alike.

H. scabrosus Horn. This species is not a typical *Hydrobius*. Further studies based on more material (I have seen only a single specimen, from City Canon, Utah, kindly given me by Professor Fall) may prove that it belongs in a distinct genus. Its head is more oblong than that of a true *Hydrobius* and less so than in *Hydrocyclus*, the coarser serial punctures of head and thorax are absent and the clypeus is emarginate. The thorax is not evenly convex, but has a vague depression in the center and on each side about one-third the distance from the lateral margin at base, and but a vestige of the sculpturing so well marked in *Helophorus*. Elytra with ten moderately deeply impressed striæ, scutellar striæ entirely absent, disc vaguely depressed each side of suture near apex, sixth dorsal interval more convex, seventh, eighth and ninth narrower and depressed, tenth much wider, more convex with the outer margin slightly inflexed. When viewed from beneath part of the flank is visible apically. There is also a marked difference in the tarsi which are round, not laterally compressed, and much narrower and cone-like at base. The second joint of the hind tarsi is, by comparison, shorter than in typical *Hydrobius* and similar in its relative proportions to that of *Hydrocyclus tessellatus* Ziegl., with the last tarsal joint longer and club-shaped. It occurs at Ketchikan, Alaska (Professor Fall) and extends as far south as San Francisco (Doctor Horn).

Genus HYDROCYCLUS Sharp

The type of the genus is *Hydrocyclus lacustris* Sharp, a Japanese species described in the Trans. Ent. Soc., London, 1884, p. 451. Mr. Alfred Knisch (Entom. Anz. Jahr. 1, 1921, pp. 99-102), added two more species and included our *H. tessellatus* Ziegl. The main characteristics of *Hydrocyclus* are: head more oblong than in *Hydrobius*, clypeus emarginate, præclypeus visible, serial punctures on head and thorax wanting, maxillary palpi longer, lower lateral margin of thorax and elytra serrate emarginate, not entire as in *Hydrobius*, prosternum carinate, tibiæ, pubescent, at least on basal half, tarsi round, not laterally compressed, conical or narrower at base, and last joint of hind tarsi longer and club-shaped.

Two species which have formerly been included under *Hy-*

drobius, are known to occur in our fauna and may easily be separated as follows:

Color pale castaneous, disc of elytra with dark brown markings, alternate intervals of elytra more convex and smooth..... <i>tessellatus</i> (Ziegl.)
Color piceous, elytral intervals equally convex, finely scabrous..... <i>latus</i> (Horn)

H. tessellatus (Ziegl.). According to Mr. Leng (Ins. of Fla., 1918, p. 111), this species is found clinging to the underside of submerged logs. A full-grown larva was taken by Mr. Schwarz among some leaves caught in roots of a tree near the margin of a swiftly flowing stream. Mr. Richmond found it to be quite tuberculate, closely resembling the larvæ of *melænus*. I have seen specimens from Bladensburg, Md., Eatontown, N. J., and Westwood, N. J. (Coll. Sherman). Mr. Leng records it from Centerville, Fla. (Roberts Coll.), and Doctor Horn gives its distribution as from Canada to Florida.

H. latus Horn. I have only one specimen of this species before me, collected by Doctor Fenyès at Castle Crag, Calif., and presented by Professor Fall. The scalloped lower margin is more distinct at the anterior half of the thorax and the apices of the elytra.

Genus CRENITIS Bedel

This genus differs from *Anacæna* and *Paracymus* by its oblong subdepressed and more parallel form, the horizontal epipleuræ of the elytra, the more convex and protuberant eyes, its slender legs and tarsi, the finely spinulose, tibiæ, hind tarsi together as long as tibiæ, and mesosternum not carinate. This genus seems to be confined to mountainous regions only.

Type *Crenitis punctatostriatus* Letzn.

Our species may be separated by the following table:

Antennæ nine-jointed.....	2
Antennæ eight-jointed.....	3
2. Thorax with a pale border, not alutaceous, posterior femora punctate and finely pubescent at basal two-thirds..... <i>dissimilis</i> (Horn)
— Thorax entirely piceous, with head and thorax alutaceous, hind femora faintly strigose..... <i>moratus</i> (Horn)

3. Elytra brownish testaceous, femora pubescent....*monticola* (Horn)
 —. Elytra piceous, brown side margin of thorax not extending apically, shining, not alutaceous, legs rufo-brunneo-testaceous
*longulus* (Fall)
 —. Piceo-testaceous, head and thorax finely alutaceous, side margin of thorax extending apically, femora piceous, basal half punctate and sparsely pubescent.....*alticola* (Fall)

C. dissimilis (Horn). Six specimens collected by Mrs. Winters at Camp Meeker, Cal., are in my collection. Doctor Horn records it from Oregon and as far south as San Francisco.

C. moratus (Horn). This species is unknown to me. Doctor Horn's specimens were collected by Mr. Strumberg in Utah.

C. monticola (Horn). I have seen specimens from the White Mountain region of New Hampshire (Mr. Leng's collection), Woodstock, Vt., in the débris of a mountain spring and the Catskill Mountains, N. Y. (Coll. Nicolay).

C. longulus (Fall). This species was taken at Mitchell, Ind., July 16, 1910, and was described by Professor Fall as a *Paracymus* (Journ. N. Y. Ent. Soc., Vol. 32, 2, June, 1924).

C. alticola (Fall). This species was collected by Mr. J. O. Martin at Tioga Pass, Sierra Nevada Mountains, Cal., altitude 10,000 feet, August, 1924. I collected one specimen at the overflow of Sheffield reservoir, Santa Barbara, May, 1925, but was unable to find any more, in spite of a most careful hunt. The maxillary palpi in the specimen before me are stouter than in *monticola*, with the second joint very robust.

Genus *Crenitulus* Winters, new genus

Eyes not protuberant, elytra narrowed posteriorly almost from the humeri, mesosternum slightly protuberant, tibiæ finely spinulose, first joint of middle and hind tarsi much shorter than second, hind tarsi longer than tibiæ.

Type *Crenitulus suturalis* (Lec.).

This genus differs from *Crenitis* by its unique form, less convex and nonprotuberant eyes and minutely punctate elytra; from *Paracymus*, by its unique form, finely spinulose tibiæ and slender tarsi, as well as by its shining piceous elytra.

Cr. suturalis (Lec.). Doctor Horn records this species as extending from Canada to Georgia; Leng and Mutchler from Punta Gorda, Titusville, and Lakeland, Fla.; Hubbard and

Schwarz from Enterprise, Kissimmee and Tampa, Fla.; while I have it in my collection from Tatowa, N. J., July; Oakland Lake, Long Island, N. Y., June; and Richmond, Va., June.

Genus ANACÆNA Thoms.

This genus differs from *Crenitis* by its shorter, more convex and globular form, nonprotuberant eyes, vertical elytral epipleuron, confusedly punctate, never subserially arranged, elytra, shorter and coarsely spinulose hind tibiæ; and from *Paracymus*, by its brownish to black color without any metallic luster and densely punctate and pubescent hind femora. Two species have been recorded from our fauna which I believe to be identical with those of the palearctic fauna.

- Clypeus and last joint of maxillary palpi piceous, thorax piceous, indefinitely paler at the side.....*limbata* (Fab.)
 Clypeus in front of each eye testaceous, last joint of maxillary palpi testaceous at base, tips piceous, thorax variegated, the piceous confluent markings separated near base by two lighter spots *bipustulata* (Marsh.)

A. limbata (Fab.). This species known to American students as *infuscatus* Motsch. is found among leaf mold in standing water, and is one of our most common *Hydrophilidæ*. Doctor Horn records it from Oregon to San Diego, eastward to Wyoming and Michigan, and thence south to New Mexico. I have seen specimens from Orono, Me., Swampscott, Mass., Nahant, Essex Co., Mass. (Coll. Dodge), Ottawa, Canada (Coll. Beaulne), Cape Breton, Nova Scotia, Brisdale, Conn. (Coll. Davis), Woodstock, Vt., Kissena Lake, L. I., Hackensack Swamp, N. J., Ardsley on Hudson, N. Y., Santa Barbara, Riverside and Camp Meeker, Cal.

A. bipustulata (Marsh.). Ent. Brit. I, 1802, p. 406 (*Hydrophilus*). This is a Mediterranean species which looks to me like *A. signaticollis* Fall, which was only recently described by Professor Fall (New Species N. A. Hydrobiini, Journ. N. Y. Ent. Soc., June, 1924, p. 87). It has never been recorded from the East, but is quite frequently found in running streams in southern California and New Mexico. I have seen specimens from Jemez Springs, Fort Wingate, N. M., Santa Barbara and Riverside, Cal.

A. globulus Payk. This species was sent to me by Professor

Chamberlain, Cornwall Bridge, Conn., in January, 1921, for identification. It was found in imported nursery stock from Ireland received March 1, 1911, by B. H. Welden, and is only mentioned as an interesting fact and for purposes of record.

Genus PARACYMUS Thoms.

This genus is easily separated from *Anacæna* by its metallic luster and sparsely punctate and at the most sparsely pubescent hind femora.

Prosternum distinctly carinate.....	2
Prosternum absolutely simple.....	9
2. Elytra alutaceous.....	3
— Elytra shining.....	5
3. Antennæ nine-jointed, form globular.....	<i>despectus</i> (Lec.)
— Antennæ seven-jointed, form oval.....	4
4. Punctuation of elytra hardly discernible.....	<i>degener</i> (Horn)
— Punctuation of elytra relatively coarser with mesosternal keel less developed.....	<i>reductus</i> (Fall.)
5. Antennæ eight-jointed.....	<i>subcupreus</i> (Say)
— Antennæ seven-jointed, mesosternal protuberance very pronounced, almost laminiform.....	6
6. Prothorax and elytra with sharply defined pale margin which is broader behind.....	7
— Prothorax and elytra suffusedly paler at sides.....	8
7. Punctuation fine and sparse (California).....	<i>elegans</i> Fall
— Punctuation coarser and closer (Alabama).....	<i>lodingi</i> Fall
8. Punctuation of elytra fine and sparse.....	<i>ellipsis</i> Fall
— Punctuation of elytra relatively coarser.....	<i>nanus</i> Fall
9. Head and thorax alutaceous, mesosternum with a slight tubercle (Eastern).....	<i>digestus</i> (Lec.)
— Head and thorax shining, mesosternum plane.....	<i>rufiventris</i> (Horn)
	<i>seriellus</i> Fall

P. despectus (Lec.). This appears to be a rare species. Its alutaceous upper surface makes it closely resemble *P. degener* (Horn), and I believe that it is often confused with it, but it is shorter and has a more globular outline, its mesosternum is less protuberant and it has nine-jointed antennæ. I have only one specimen, from North Beach, Long Island, N. Y., before me. Doctor Horn gives its distribution as: Massachusetts, Pennsylvania, Michigan, and Illinois.

P. degener (Horn). This species, according to Doctor Horn,

has nonpunctate elytra, but the series before me proves that statement to be incorrect. While the punctuation is extremely fine and variable, it is discernible with a high-power lens. It seems to occur quite commonly in Florida. My specimens were collected by Mr. Davis at Everglade, Fla., April to May.

P. reductus Fall. The typical form of this is unknown to me, but I believe that it is only a form of *degener* with the punctuation more pronounced.

P. subcupreus (Say). This is a very widely distributed species inhabiting most likely the entire nearctic region. It varies in size. In the California form the front claw joint is stouter in the male, but I am unable to find any other characters that would separate it from eastern specimens, a fact which was also noted by Professor Fall (Cal. Acad. Sci., Occas. Papers, 8, 1901, p. 218).

P. elegans Fall. This is unknown to me. It was described by Professor Fall from specimens taken in a salt pool at Redondo, Cal.

P. lodingi Fall. This species is easily recognized by its coarse punctuation and well-defined pale border. One specimen was kindly given to me by Mr. Schæffer which was collected by Mr. Loding at Mobile, Ala.

P. ellipsis Fall. This was described from specimens collected by Mr. Schwarz at Hot Springs, Ariz. I collected three specimens at the Arrowhead Hot Springs, Cal., in July.

P. nanus Fall. I believe this to be a distinct species. Specimens are before me from Lakeland, Fla., and South Bay, Lake Okeechobee, Fla.

P. digestus (Lec.). This species occurs in mountain streams. My specimens are from Tompkins Cove, N. Y., Ardsley on Hudson, N. Y., Catskill Mountains (Coll. Nicolay), and Cornwall, Mass. (Coll. Chamberlain).

P. rufiventris (Horn). According to Professor Fall, this species is more convex and with the outer rows of punctures less pronounced than the following. I have four specimens before me from Jemez Springs, N. M., that were given to me by Mr. Sherman.

P. seriellus Fall. Four specimens from Camp Meeker, Cal.,

are before me, which seem to agree with Professor Fall's description of *seriellus*. While this species and the last seem to differ as regards their convexity, I am unable to find any specific characters to separate them.

AN INTERESTING NEW BEE FROM CALIFORNIA

BY T. D. A. COCKERELL

Bombomelecta callura Cockerell, n. sp.

Male. Length about 14 mm.; robust, black, with rather short and obtuse scutellar spines; antennæ entirely black; flagellum thick, but not excessively so; third antennal joint not conspicuously longer than fourth, fourth about as long as broad; clypeus, front and occiput with long white hair, sides of face and cheeks with long black hair; thorax above with cream-colored hair except for a large median patch of black hair which does not extend to tegulæ; mesopleura with dull white hair, but long black hair on sides of metathorax; tegulæ black; wings brownish; second cubital cell very narrow; third cubital bulging excessively on outer side; hair of legs largely black, but long white hair at end of anterior femora beneath; middle tibiæ densely clothed with white felt-like hair on outer side, hind tibiæ with white hair anteriorly at base and apex (most at base); hind basitarsi above with thin white hair, and small joints of all tarsi with more or less pale hair; first abdominal segment clothed with long creamy-white hair, but some black along apical margin; remaining segments with black hair, but third to sixth each with a pair of large rounded spots of dense white tomentum, these spots altogether arranged in a V-like pattern; fourth and fifth ventral segments with pale hair.

Type, male, No. 2396, Mus. Calif. Acad. Sci., collected by M. C. Van Duzee, February 28, 1926, at Mill Valley, Marin County, California. A very distinct and beautiful species of this parasitic genus. The spotting of the abdomen reminds one of *B. johnsoni* Ckll., but that has only six spots and the hair of the thorax above is lively fulvous, without a black patch. They agree in the bulging third cubital cell. *B. maculata* (Vier.) is a much smaller species with four spots on abdomen and hair of clypeus and mesopleura black.